4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Anticipated Effects of Implementing the Proposed Action and the No Action Alternative

4.1.1 Air Quality

Proposed Action

Potential temporary effects on air quality would be associated with the Proposed Action. Installation activities, including demolition, site preparation, and trenching, would result in temporary, localized emissions associated with vehicle and equipment exhaust as well as particulate (dust) emissions from excavation and construction activities. Air emissions from the installed CTGs would not be expected to exceed either the NAAQS or the NMAAQs as adopted by the State of New Mexico in its SIP. Cumulative NOx emissions from the Co-generation Complex would not exceed 99.6 tpy per unit. Emissions from all new sources would be limited to 40 tpy NOx. Effects of the Proposed Action on air quality would be negligible.

Option A. NOx emissions from the simple-cycle CTGs would not exceed the PSD permitting threshold of 40 tpy per unit because of the installation of a dry, low NOx combustion system and the inclusion of this as an enforceable requirement in the minor source permit. The use of dry, low NOx combustors on the simple-cycle CTGs, with reduced fuel burning, would control and lower NOx emissions to below the PSD permitting thresholds, and ensure that the NOx emission limit in the NSPS for gas turbines would be achieved.

Option B. Similarly, the further addition of the SCR system on the combined-cycle co-generation CTGs would control and lower NOx emissions on these units by an additional 60 percent to 70 percent, to below the PSD permitting thresholds of 40 tpy NOx per unit, and ensure that the NOx emission limit in the NSPS for gas turbines would be achieved. Similar to Option A, emissions from each CTG would not exceed 40 tpy because of the installation of the SCR system.

If necessary, hazardous wastes from the PRS would be removed by the CTG project before the proposed construction activities begin. Remediation activities could potentially affect air quality on a temporary basis. Excavation activities for the purpose of removing contaminated soil from the PRS for treatment or transport could result in a minor amount of airborne fugitive dust. The amounts of air emissions would be kept to a minimum by the control measures proposed as part of the Proposed Action, such as the use of water spray trucks and soil tackifiers.

Emissions from internal combustion and diesel engine combustion products would result from excavation and construction activities. All air emissions associated with the operation of excavation and construction equipment would be within ambient air quality standards. Total emissions of criteria pollutants and other air emissions associated with the operation of heavy equipment for excavation and construction activities would contribute greater emissions than other vehicles due to the types of engines and their respective emission factors.

No Action Alternative

There would be no change from ambient air quality effects associated with implementing the No Action Alternative. Excavation, construction, and demolition activities would not occur. There would be no new emissions from the TA-3 Co-generation Complex area, because the gas-fired turbines would not be installed.

4.1.2 Waste Management

Proposed Action

The Proposed Action would require managing and disposing of wastes generated by construction and demolition activities. These activities would have a small effect on waste management resources in the area. As previously discussed in the Proposed Action description in Section 2.1, installation of the CTGs and potential conversion to combined-cycle operation would incorporate, to the extent practical, the recommendations provided in the Pollution Prevention Design Assessment for this project.

The waste management plan for the Proposed Action would be to dispose of the solid waste from construction and demolition at the Los Alamos Country landfill, a new regional facility, or other New Mexico landfills in accordance with practices required by LANL's Laboratory Implementing Requirement for General Waste Management (LANL 1998). A Waste Minimization Plan would be prepared by the installation contractor to minimize the generation of waste during the installation phase of the project. Reclaimed crushed concrete rubble would either be reused onsite during construction or would be staged at an approved material management area for future use at LANL or would be transported to the Los Alamos County Landfill for recycling through an existing LANL recycling contract. Uncontaminated soil that could not be reused onsite would be stored at an approved material management area for future use at LANL. Contaminated soil containing hazardous constituents which may result from PRS remediation activities would be disposed of appropriately as discussed in Section 3.3. The Proposed Action would not require the construction of any new waste landfills.

The waste quantities discussed for Option A and Option B have been developed from preliminary estimates and from similar post-project knowledge and are expected to bound the actual waste amounts generated. The estimates would be refined as additional information becomes available during the development of the project design.

Option A

Construction waste would be generated from the demolition of cooling tower Building 3-285 (see Figure 4). Approximately 2,250 yd^3 (1,710 m^3) of construction debris is estimated to result from demolition of this structure. Material that cannot be recycled would be disposed of at the Los Alamos County Landfill or other New Mexico solid waste landfills. Recyclable material would be transported to an appropriate recycling facility or would be staged at the Los Alamos County Landfill for recycling. Lead-contaminated items are RCRA-designated "characteristic" hazardous waste constituents. Lead-based paint would be chemically stabilized and rendered

non-hazardous by spraying or painting with a bonding material and would then be disposed of in the Los Alamos County Landfill or its replacement facility.

Hazardous wastes would be identified and removed from the structures scheduled for demolition before general structural demolition begins. The only hazardous wastes expected to be generated by implementing the Proposed Action would be a small amount of asbestos from the demolition of the cooling towers and possibly contaminated soil resulting from cleanup of the PRS, if sampling and characterization activities indicate that this is required. Asbestos removal is stringently controlled. Asbestos disposal is regulated under RCRA as a nonhazardous waste. It is classified as a New Mexico Special Waste that has unique handling, transportation, and disposal requirements to ensure protection of the environment and the health, welfare, and safety of the public. Asbestos wastes generated during demolition activities are regulated under the NESHAP for Asbestos (Asbestos NESHAP [40 CFR 61, Subpart M]) and would be managed in accordance with all applicable regulations. Approximately 1.2 yd^3 (0.9 m^3) of asbestos-contaminated material would be appropriately disposed of offsite at permitted landfills. Depending on the results of soil sampling, contaminated soil may need to be removed from the PRS before construction activities begin. An upper bound estimate of 580 yd^3 (440 m^3) of soil may require disposal as hazardous waste.

Option B

Building 3-58 would be demolished to vacate space for the installation of the HRSG. Construction waste would be generated from the demolition of cooling tower Building 3-58 (see Figure 4). Approximately 2,750 yd^3 (2,090 m^3) of construction debris is estimated to result from demolition of this structure. Approximately 2.5 yd^3 (1.9 m^3) of asbestos-contaminated material would be disposed of offsite. Disposition of the demolition debris is the same as that discussed for Option A in the previous section.

If the project chooses Option B, conversion of the existing simple-cycle CTGs to combined-cycle co-generation CTGs, then additional soil sampling and characterization would need to be done at that time. Similar to Option A, remediation of the consolidated PRS may also be required under Option B. Disposal of this waste is discussed in Section 3.3.

No Action Alternative

There would be no additional waste generated under the No Action Alternative. There would be no demolition, excavation, or construction activities. The construction debris waste shipments to landfills or recycling centers would not occur. There would be no generation of asbestos-containing material or any other hazardous waste. There would be no cleanup of the consolidated PRS before its scheduled remediation.

4.1.3 Environmental Restoration

Proposed Action

The PRS of concern is a consolidated unit identified as SWMU 03-012(b)-00. ER Project documentation states that contamination found at the site of the Proposed Action is possibly from chemicals used in association with the cooling towers and other utility operations in the area.

The constituents of concern are chromates, lead, cyanide, mercury, and silver. In the past, chromates were used to treat the cooling-tower water for corrosion control and it is possible that the overspray from the towers is the cause of the contamination in the area. These constituents have been found in elevated concentrations that would cause some excavated material from this site to be treated as hazardous waste.

The CTG project, in consultation with the ER Project, would perform site characterization and sampling to determine the extent of contamination and if site remediation would be required before installation and utility corridor trenching activities could proceed. If analyses indicate that certain constituents in the soil are at elevated concentrations and would not pass the Total Concentrate Leachate Procedure test, the soil would be disposed of as a RCRA hazardous waste at an offsite treatment, storage, and disposal facility. Excavated material that is determined not to be hazardous would be returned to the site.

The environmental consequences would be the same for both Option A and Option B. If sampling and characterization indicate that remediation of this PRS is required, site cleanup would occur before construction. Hazardous wastes from the PRS affected by excavation, demolition, or construction activities would be removed and disposed of in accordance with LANL waste management requirements (Section 3.3) before installation activities begin.

No Action Alternative

Under the No Action Alternative, the proposed installation of the CTGs would not occur. The PRS in the proposed siting location would not be affected by construction activities. Site cleanup activities would not be accelerated to provide remediation of this particular PRS.

4.1.4 Utilities and Infrastructure

Proposed Action

Option A and Option B under the Proposed Action would have negligible adverse effects during construction, but would produce a long-term positive benefit. The proposed 20-MW simple-cycle CTGs and combined-cycle co-generation CTGs would assure there is adequate power for existing and approved LANL operations. The Co-generation Complex is operating at a fraction of its 20-MW capacity because one of its three turbines is in need of repair. Peak LANL demand (86 MW) occurred in September 2001 when the LANSCE facility was operating. The proposed CTGs would extend this margin consistent with the Expanded Operations scenario analyzed in the SWEIS, approved by the ROD and required by the MAP (DOE 1999b). The proposed CTGs would enhance power reliability at LANL by providing redundancy in the event of service disruptions. The approximately 40-MW capability from the proposed CTGs and the potential 20-MW steam-generating capability at the TA-3 Co-generation Complex could provide the capability to meet minimum electric loads for LANL and Los Alamos County in the event of a total blackout of the northern New Mexico grid.

No-Action Alternative

Under the No-Action Alternative, NNSA would not install two new approximately 20-MW CTGs and, consequently, the cooling towers now occupying the proposed site would not be

demolished and would not require disposal. DOE/NNSA and LANL would need to seek other power sources, such as an additional high-voltage electric power transmission line, to support mission requirements and provide backup capability.

4.1.5 Noise

Proposed Action

The environmental consequences would be the same for both Option A and Option B. The Proposed Action would result in limited short-term increases in noise levels associated with various demolition and construction activities. Following the completion of these activities, noise levels would remain below 82 dBA at 10 ft (3 m) from the proposed new CTGs. Noise generated by the Proposed Action is not expected to have an adverse effect on LANL workers, members of the public, or on the environment.

The demolition of existing structures, earthmoving activities, and structure construction would require the use of heavy equipment for removal of debris, dirt, and vegetation and for installation of the new concrete pads. Heavy equipment, such as front-end loaders and backhoes, used during construction would produce intermittent noise levels at around 73 to 94 dBA at 50 ft (15 m) from the work site under normal working conditions (Canter 1996, Magrab 1975). Truck traffic would occur frequently but would generally produce noise levels below that of the heavy equipment. PPE would be recommended if site-specific work produced noise levels above the LANL action level of 82 dBA. Based upon a number of physical features, such as attenuation factors, noise levels should return to background levels within about 200 ft (66 m) of the noise source (Canter 1996). Since sound levels would be expected to dissipate to background levels before reaching most publicly accessible areas or undisturbed wildlife habitats, sounds from construction activities should not be noticeable to most members of the public and should not disturb most local wildlife.

The proposed new CTGs would house equipment that generates noise at levels well above the LANL action level of 82 dBA. Noise levels that exceed the action level would typically trigger the implementation of a hearing conservation program for workers. However, the proposed new facility would be designed so that the turbines would be isolated or enclosed to reduce noise levels to 85 dBA or less at 3 ft (1 m) from the enclosures. In addition, no permanent staff would be located within the enclosures or within 3 ft (1 m) of the enclosures. Therefore, a hearing conservation program would not be required for workers at the proposed new CTGs.

Traffic noise from commuting workers would not be expected to noticeably increase the present traffic noise level on roads at LANL. The vehicles of workers would remain parked during the day and would not contribute to background noise levels. Therefore, noise levels are not expected to exceed the established TLV.

Long-term maintenance of the CTGs would not require the use of heavy equipment. Routine maintenance operations under the Proposed Action would not result in noise levels any higher than these already existing in the Co-generation Complex.

No Action Alternative

Under the No Action Alternative, ambient noise levels would remain unchanged in the vicinity of TA-3. Potential noise from operation, demolition, and construction activities associated with the Proposed Action would not occur.

4.1.6 Geology

Proposed Action

The environmental consequences to this resource would be the same for both Option A and Option B. The local geologic setting is expected to have minimal effects on the Proposed Action. Seismic activity may affect the new CTGs, however, the probability of a seismic event is very low.

The entire TA-3 area lies within the Diamond Drive Graben (a basin bounded by two faults) which is bounded by the Pajarito Fault on the west and the Rendija Canyon Fault on the east (Gardner et al., 1999). As such, the Proposed Action is in an area of generally higher potential for seismic surface rupture relative to locations farther removed from the Pajarito Fault Zone (Gardner et al., 2001). The location for the proposed CTGs is greater than 50 ft (15 m) from any known fault line (Figures 7 and 8). However, probabilistic analysis of 1 in 10,000 year seismic events suggests that significant seismic events are only expected to occur along, or on, the main trace of the Pajarito Fault (Gardner et al., 2001) west of State Road 501. Even though probabilities are low, the Pajarito Fault Zone must be considered active or "capable" in the definitions of 10 CFR 100 Appendix A.

A surface rupturing seismic event within or near the Pajarito Fault Zone could have consequences for the new CTGs and other structures within the area. As such, the new CTGs may require additional structural reinforcements to meet current building codes with respect to seismic hazards.

No Action Alternative

Under the No Action Alternative, the new CTGs would not be installed. Therefore, there would be no effects to consider.

4.1.7 Human Health

Proposed Action

This section considers the health of LANL and non-LANL construction and maintenance workers. These two categories are considered in this EA because each category of worker would either be involved in the installation or the maintenance of the new CTGs at LANL under the Proposed Action. LANL workers would be the primary users of the proposed CTGs. Members of the general public unaffiliated with LANL are not considered because they would not be allowed access to the proposed CTGs.